

APPENDIX F

**By 2003 Federal Laboratory Consortium (FLC) Awards to the
Department of Defense**

FY 2003 FLC Awards to the Department of Defense

2003 Laboratory Director of the Year: Jim Zarzycki

Mr. Jim Zarzycki is Director of the U.S. Army's Edgewood Chemical Biological Center (ECBC). Mr. Zarzycki has made technology transfer a high priority at ECBC, encouraging scientists, engineers, managers, and staff to actively participate in and support the program. As a result, technology transfer activities have evolved from a single ORTA to a Business Development Team of ten highly motivated individuals working collectively to develop new business opportunities, strengthen relationships with industrial and academic partners, and reach out to state and local communities. To ensure technology transfer agreements are consistent with the Center's goals, mission, and applicable regulatory requirements, Mr. Zarzycki directed the ECBC to institute a robust, highly responsive, review process for technology transfer agreements.



An illustration of Mr. Zarzycki's personal involvement in support of technology transfer is the internal funding and visibility he gives such projects. One recent example, the Biological Sampling Kit (BiSKit), was submitted for this year's FLC Excellence in Technology Transfer Award along with two other nominations. Mr. Zarzycki not only encouraged the nominations, but provided internal laboratory funds critical for the technology to reach a stage of development suitable for transfer to a commercial partner/licensee. Last year, Mr. Zarzycki submitted two winning Excellence in Technology Transfer Awards.

Additional impact internal to the laboratory includes an on-going technology transfer training program available to all ECBC personnel; a technology transfer section in each CB QUARTERLY publication, which is widely read both internally and externally to ECBC; the frequent appearance of technology transfer accomplishments in ECBC weekly highlights; and CRADA/PLA signing ceremonies in which Mr. Zarzycki discusses the results that will be achieved by the technology transfer. The technology transfer program at ECBC has grown from 11 active CRADAs in 1998 when Jim Zarzycki assumed the position as Director, to 43 active CRADAs, 11 patent license agreements, 24 new test service agreements, and 26 agreements with Other Government Agencies.

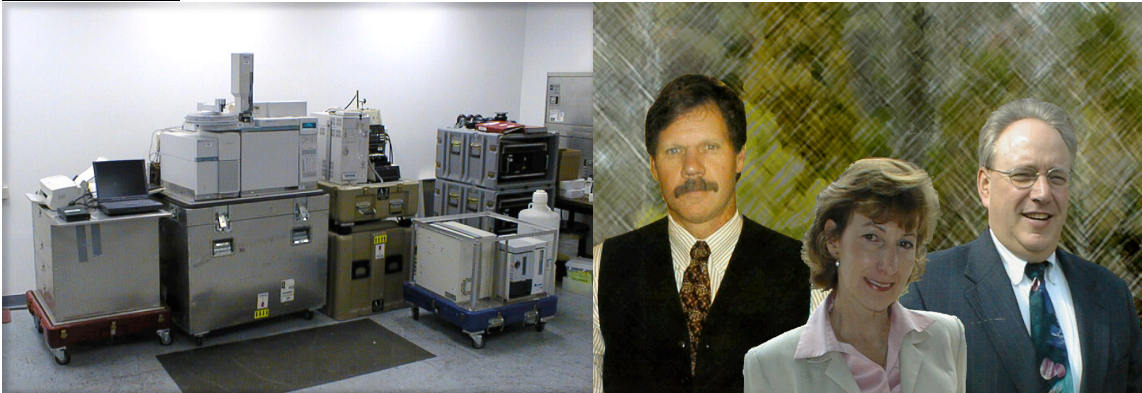
Mr. Zarzycki participates in several external organizations involved in technology transfer, including the Federal Laboratory Consortium, Northeast Maryland Technology Council, Aberdeen Proving Ground Science & Technology Board and its Business Development Office, and the Maryland Technology Development Corporation.

Under Mr. Zarzycki's leadership, ECBC has transferred technology to state/local government and industry. For example, the Department of Justice (DOJ) and ECBC have worked closely since 1998 to leverage the technical expertise available at ECBC. With support from ECBC under an Interagency Agreement, DOJ's Center for Domestic Preparedness (CDP) has trained over 11,000 emergency responders to effectively recognize and respond to terrorist incidents involving chemical and biological agents and to enhance the capabilities of state and local jurisdictions.

FY 2002 was a unique year for technology transfer at ECBC due to the tragic events of 9/11/01 and the war on terrorism. ECBC, under the leadership of Mr. Jim Zarzycki, utilized its technology transfer program to meet some of the challenges presented. Technologies developed to protect soldiers on the battlefield were transferred to other government agencies and industry partners for the protection of private citizens. Mr. Zarzycki enhanced the technology transfer program at ECBC to meet this unprecedented challenge, while continuing to support other commercial applications of ECBC technologies, thus serving as a vital partner to industry in numerous collaborations.

U.S. Army
Edgewood Chemical Biological Center

Design, Development, Training, Fielding, and Continued Consultation for Mobile Laboratories



In the event of a chemical, biological or radiological terrorism attack, first responders, military leaders, and federal agencies need tools that will allow them to sample and analyze materials in a precise and uniform manner. A team from the Edgewood Chemical Biological Center (ECBC) has been active in all aspects of improving mobile laboratories and providing solutions for efficient and accurate field analysis of chemical and biological materials. The technologies developed by this team include the development of turn-key capabilities that integrate and standardize field sampling, as well as analysis tools that support its users. Additionally, the technologies address regulatory issues concerning transportation, environmental law and safety compliance.

Numerous partnerships using cooperative research and development agreements (CRADAs), patents, license agreements, and transfer mechanisms contributed to the success of the project. Often one successful effort precipitated work with another partner. To date, those partners have included Purified MicroEnvironments, Quick Silver Analytics, Inc., the Federal Bureau of Investigation (FBI), and the Food and Drug Administration (FDA).

Both the public and private sectors have directly benefited from ECBC's mobile laboratory technologies. This team has provided improved strategies that will ultimately enhance law enforcement efforts to protect the U.S. against terrorism and the threat of weapons of mass destruction.

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Antibody Engineering for Expression in Insect Cells and Larvae

This technology addresses an advanced method for manufacturing recombinant proteins in insect cells and larvae. It consists of genes for a recombinant antibody that binds a biological warfare agent (botulinum toxin). The genes were cloned in a way that makes it possible to produce the antibody in insect larvae. Antibodies are currently deployed as the recognition component of sensors that detect biological threat agents.

The Edgewood Chemical Biological Center (ECBC) team is transferring this technology through a partnership with Chesapeake PERL (C-PERL), a company based in College Park, Maryland. By way of a cooperative research and development agreement (CRADA), C-PERL scientists are pioneering a technology that transforms the insect larvae into miniature protein factories. This is the latest attempt to manufacture biological material for use in a new generation of medicines and diagnostic tests.

The CRADA has proven to be successful for both ECBC and C-PERL. In particular, the partnership enabled C-PERL to more than double the size of its staff. Last year, the company won the Maryland Biotech/Life Sciences Incubator Company of the Year Award, and was featured in over 20 news articles—including *Fortune Magazine's* "Coolest Companies of 2002."

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U.S. Army Natick Soldier Center

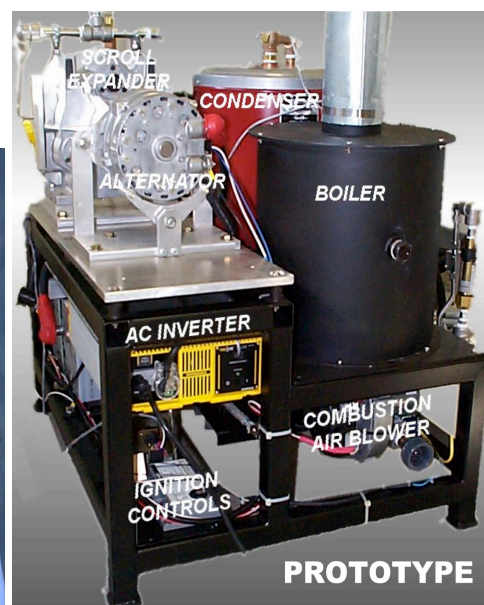
Small-scale Cogeneration of Heat and Electric Power

The first practical small-scale cogenerator, developed by the team of Don Pickard and Frank Dileo, efficiently provides the energy needs of a battalion level field kitchen. Cogenerators produce heat and electric power from one process 80 percent more efficiently than separate heaters and generators. Instead of using dry saturated or superheated steam as in a conventional Rankine cycle, a high temperature two-phase mixture of steam and water is injected into an expander. The alternator coupled to the expander produces electrical power, while the remaining heat is used for cooking and sanitation.

The Natick Soldier Center team has been involved in the discovery and exploitation of cogeneration for the past five years. They joined forces with engineers at Yankee Scientific, a Medfield, Massachusetts-based company, to adapt the liquid injection cogeneration (LIC) process to field kitchens. The resulting prototype was a success, leading to the two largest home HVAC manufacturers to express an interest in the cogenerator. The technology was formally transferred when Yankee Scientific and ECR International formed a joint venture called Climate Energy LLC to develop and market the technology. In 2001 the technology was fully developed and tested with kitchen appliances, and integrated into a fully functioning kitchen in 2002.

Electric Power generation using small-scale cogenerators offer significant environmental advantages and other benefits when compared to conventional power plants as less fuel is burned, the fuel burned is cleaner, and the fuel is burned over a broad area unlike the concentrated pollution produced by power plants.

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U.S. Navy

Naval Research Laboratory

Optical Real-Time Adaptive Spectral Identification System



The Optical Real-Time Adaptive Spectral Identification System (ORASIS) is a software application for the analysis and compression of hyperspectral images based on a patented algorithm from the Naval Research Laboratory (NRL). Hyperspectral images are composite images, made up of multiple pictures of a “scene” taken at different wavelengths. This technology mathematically identifies constituent components and maps their abundances within the image.

Through the efforts of Dr. Jeffrey Bowles, ORASIS has been transferred to Advanced Power Technology, Incorporated (APTI) under the terms of a nonexclusive license with NRL. Using the technology, the licensee is selling value-added earth image analysis products and services, such as customized maps, and systems for remote sensing data collection and analysis.

The earth image products from ORASIS will be used for oil, gas, and mineral exploration; environmental assessment; crop analysis for optimizing irrigation and fertilization; and military remote sensing. Based on the array of areas in which the technology can be applied, the individuals, businesses, agencies, etc. that will benefit ranges from doctors and patients to farmers, manufacturers and oil companies.

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Harold Metcalf Award – Dr. Michael Sullivan

Dr. Sullivan is the Head of the Technology Development Projects Office and the Office of Research and Technology Applications (ORTA) for the Naval Air Warfare Center Weapons Division at Point Mugu. He also is serving in the following capacities: FLC Far West Deputy Regional Coordinator and Member at Large, the FLC Executive Board, Department of Defense (DoD) Technology Transfer Policy Committee Chair, and DoD Technology Transfer Integrated Planning Team (TTIPT) committee member. Additionally, he has served as a member of the FLC Executive Committee and led the Far West Region as the Deputy and Regional Coordinator. Dr. Sullivan has been a member of the FLC Planning and Policy,



Finance, Program, Training, and Legal Committees.

Dr. Sullivan's contributions to the FLC are as diverse as his participation. Within the Far West Region, Dr. Sullivan has facilitated partnerships by focusing on the business needs of companies. Working with the economic and twelve academic members of the CORE 21 (Connecting Research & Economic Development for the 21st Century), and coordinating with the Department of Commerce (DoC), Bureau of Export Administration's Federal Resource Access Partnership (FRAP) program, businesses near the CORE 21 members were surveyed. The business needs identified by the responses were then matched to the technologies, intellectual property, unique facilities, and human resources at the region's member laboratories and college members of CORE 21. As a result, the FLC Far West Region successfully initiated memoranda of understanding with several counties to support regional technology transfer efforts.

Using this process and partnering with Manufacturing Extension Centers and the DoC BXA, additional "Industry Needs Surveys" were completed for businesses in Los Angeles, Seattle, San Diego, San Francisco, Phoenix, and Tucson, and their metropolitan areas. The business needs identified by these responses were then matched to eighteen technology areas, including transportation, medical devices, environmental, and manufacturing, thus enabling the Far West Region federal laboratories to present solutions to specific company needs. Dr. Sullivan has worked with the Small Business Development Centers (SBDCs) within the Los Angeles, Ventura, and Santa Barbara counties to help companies both introduce their technologies to the Federal laboratories and use the Federal laboratories to develop company technologies and commercialize their products. Dr. Sullivan also promoted technology transfer outreach as describe below:

- Appeared on the program "Technology 2000", which aired on the Discovery channel, allowing promotion of the unique technologies available at Point Mugu and throughout the Far West Region.
- Established a dynamic web site for the Far West Region to assist all Regional members to meet the 21st Century challenges of the global marketplace by presenting their capabilities on the internet.
- Established an interactive roundtable on the internet for the Far West Region to share practices and lessons learned in a timely manner.
- Coordinated the contents and production of a promotional CD-ROM business card highlighting technologies, patents available for licensing and commercialization, and unique regional facilities of the laboratories and technical activities in the Far West Region.
- Sponsored, coordinated, and presented environmental technologies jointly with other FLC Regions at national environmental meetings with a leading university.

In summary, Dr. Sullivan's major contributions to the FLC demonstrate his commitment to technology transfer and the need for individual, active

participation to strengthen the FLC. His effort goes unequaled in improving and promoting the FLC and goals.